

Nasality



This program is made for evaluate the degree of congenital or established velar deficiencies by measuring the nasal leakage during a speech production. It allows to study the labials, apico-alveolar and lingo-palatal articulations by visualization of the oral airflow, and the velar articulations by visualization of the nasal airflow. This program is a useful tool for assessment of precocious dysarthria.

Principle

1. Recording of a sentence with or without predictable nasality :
example : my aunt has sung this morning ⇔ predictable nasality
 that top goes too fast ⇔ no nasality
2. Visualization of the exhaled and inhaled airflow at the lips and nostrils. Computing of the volumes ratio nasal/volume expired in percentage on sentences containing occlusive and constrictive consonants.
3. Manipulator places two cursors at the beginning and end of the voiced part. Calculation is performed between these two cursors.

Preparation

Equipment

Place a disinfected mask on the mouthpiece. Choose a mask that will fit well with the patient face.

☞ Do not stretch too much the mask to avoid splitting the synthetic material.

Place the nose tube. Verify that the nozzles are well fitted with the patient nostrils.

Turn the selector **INPUT 1-LEFT** on **MASK**.

Software

Launch the SESANE software by clicking this icon in Windows task bar.



In SESANE, enter the patient information :



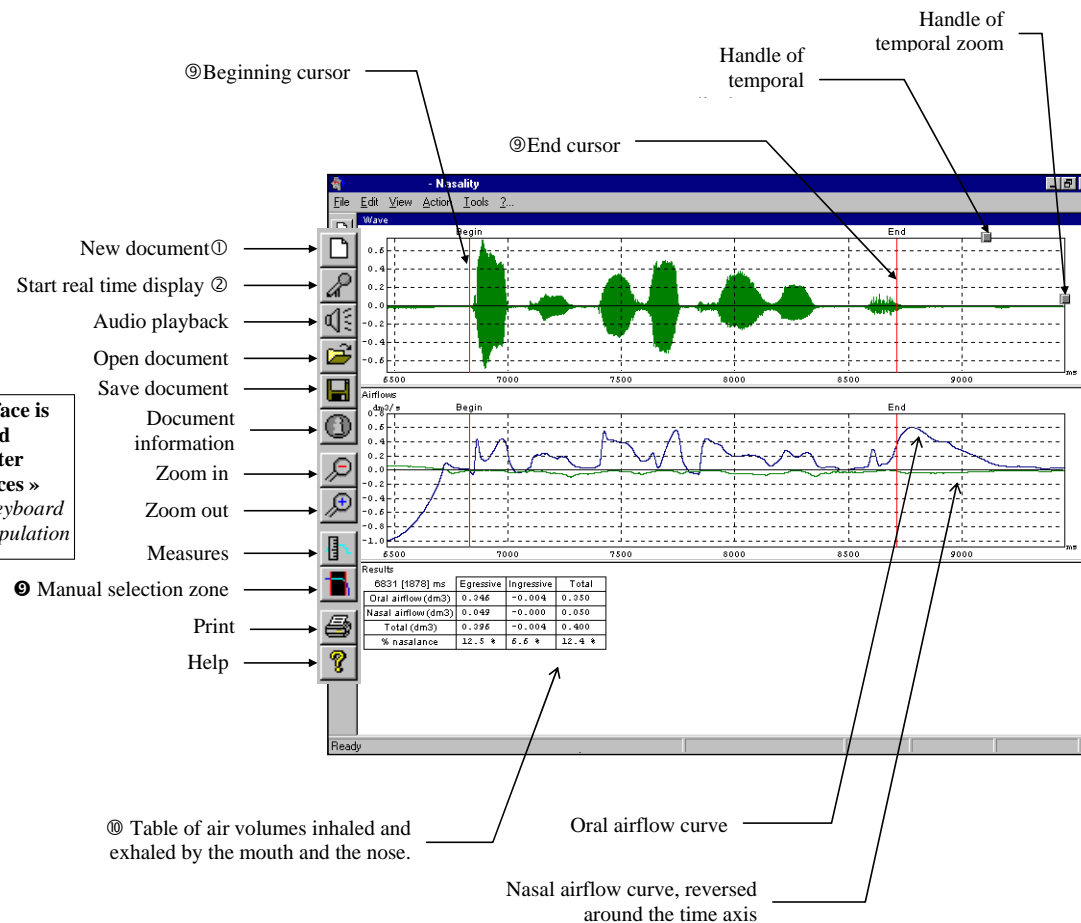
Patient Informations

Then double click on this icon :



Using Nasality

Main window



Protocol

- ① Create a new document if necessary
- ② Start real time display. *The record control window appears..*

Move away the patient from the mouthpiece.

- ③ Calibrate the sensors, wait three seconds. *The airflow level must be at zero.*
Replace the patient in position.
Verify that the patient is correctly pressed against the mask, and check that there is no air leakage between the nostrils and the nozzles.

Patient pronounce the sentence for a try.

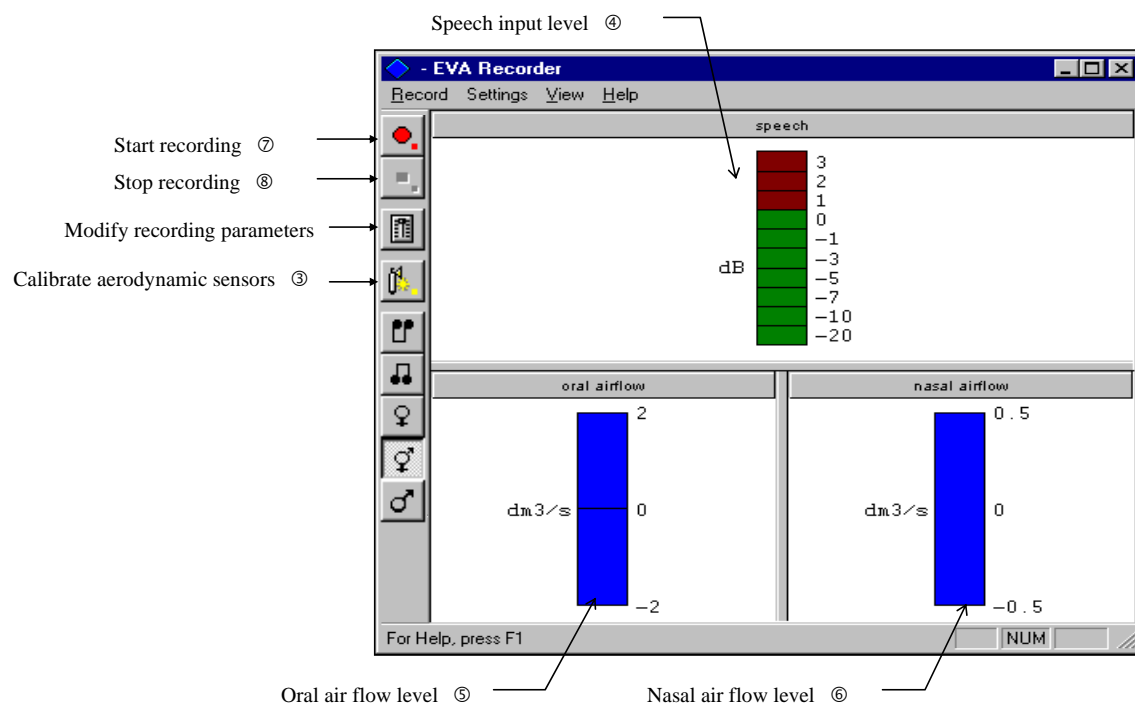
- ④ Verify the recording level of the acoustic input vu-meter. Beware of not reaching +3 dB while recording. If necessary, adjust the volume button of INPUT 1-LEFT. A low signal may indicate a bad position of the selector MASK - MICRO - LINE.

- ⑤ Verify that the oral air flow input level does not saturate during phonation. *In this case, the color bar graph turns yellow.*

- ⑥ Verify that the nasal air flow input level does not saturate during phonation. *In this case, the color bar graph turns yellow.*



Record control window



⑦ Start recording

The patient pronounce its sentence.

⑧ Stop recording. *The main window appears.*

Sentence delimiting cursors appear automatically. Look for the beginning and the end of the sentence. If needed use the zoom and movement handles or the zoom icons.

⑨a) Place the left cursor at the beginning of the sentence. To move this cursor, place the mouse pointer near the cursor, click and hold down the left mouse button, and move the mouse at start of the voiced signal.

⑨b) Place the right cursor at the end of the sentence.

⑩ It is possible to select manually the analysis zone (see below):

- select a zone
- push down the icon ⑩

⑪ Statistics appear immediately in the result chart.

Save the document.
Print the document.

Measurement

Measurements are performed using two cursors defining the beginning and the end of the test sentence.

Creating and moving the observation cursors

Cursors defining the sentence appear automatically. Place the left cursor at the beginning of the sentence :

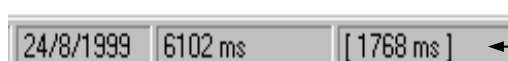
1. move the mouse pointer near the cursor,
2. click and hold down the left mouse button.
3. drag the mouse pointer at start of the signal.
4. release

Place the right cursor at the end of the sentence, using the same procedure.

One can also define manually an observation zone :

1. Create a selection zone (place the mouse cursor at the beginning, hold down the left mouse button, and the shift key at the same time, drag the mouse at the end of the selection, release)

You can control the selection duration by looking the program state bar :



Selection duration



2. click on the icon
or select the menu « Action / Manual selection »
or use the « S » keyboard shortcut

Results

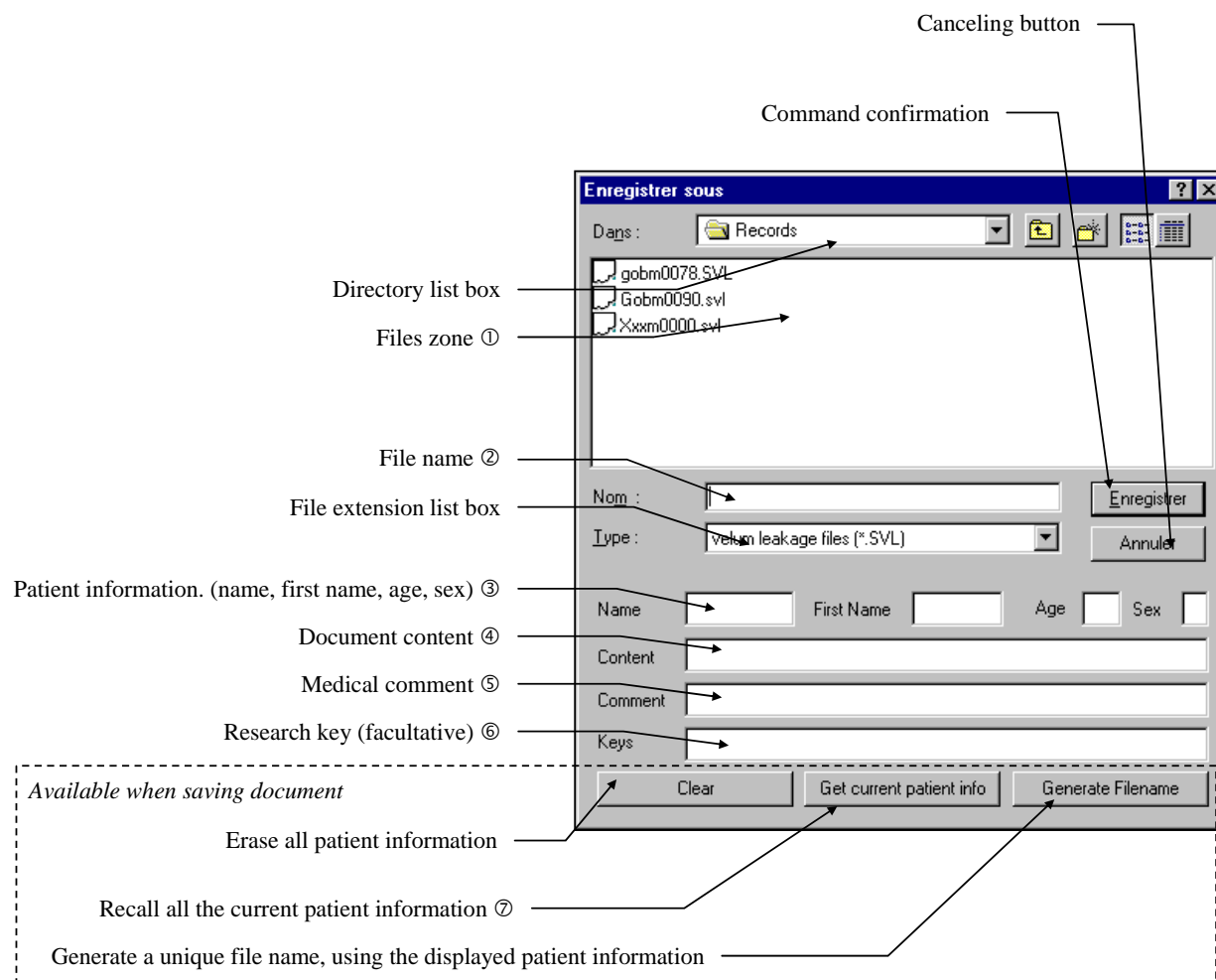
This program allows to compare the air volumes flowing through the mouth and the nostrils during the production of a type sentence. The different volumes are computed between two cursors located at the beginning et the end of a sentence. They are displayed in a recapitulative chart :

6831 [1878] ms	Egressive	Ingressive	Total	
Oral airflow (dm3)	0.346	-0.004	0.350	
Nasal airflow (dm3)	0.049	-0.000	0.050	
Total (dm3)	0.396	-0.004	0.400	
% nasalance	12.5 %	6.6 %	12.4 %	← Ratios Line between nasal volume and the nasal+oral volume

Egressive
volumes column

Ingressive
volumes column

Data Management



Save a document

Method 1 : Click on ⑦. The current patient information appear in the fields ③, ④, ⑤, ⑥. A unique filename is automatically generated in ②. Confirm by clicking on ⑨.

Method 2 : Enter manually the patient information in the fields ③, ④, ⑤, ⑥. Click on ⑧. A unique filename appears in ②. Confirm the saving by clicking on ⑨.

Method 3 : Enter manually the patient information in the fields ③, ④, ⑤, ⑥. Enter a file name in ①. Confirm the saving by clicking on ⑨.



Open a document

Select a document in ① by a single click with the left mouse button.. The file name appears in ② with its information as well in ③, ④, ⑤ ⑥. Confirm your choice by clicking on ⑨.

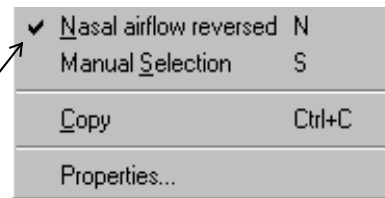


To obtain information about the current document

Options

By clicking the right mouse button on the air flow curves, this menu appears :

Allows to inverse or replace
the nasal air flow curve
around the time axis



Visualisation in mirror of the nasal curve is interesting because of its easy comparison with the oral airflow.

Notes

Normality

In normal phonation, without predictable nasality, the ratio between nasal volume and total volume exhaled must be inferior to 3%.